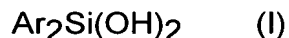
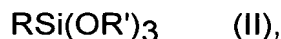


Claims:

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A.
1. Organically modified, stable in storage, UV curable, NIR permeable silicic acid polycondensate which is photostructurable in layers having a thickness of 1 to 150  $\mu\text{m}$ , **obtainable** by condensation of one or more organically modified silanediols of the general formula I and/or precondensates derived therefrom



with one or more organically modified silanes of the general formula II



wherein condensation occurs without the addition of water,

wherein the molar ratio of the compounds I and II in relation to the monomers is 1 : 1,

wherein up to 90 mole percent of said compound II can be replaced by one or more co-condensable compounds of boron, aluminum, silicon, germanium, titanium and zirconium,

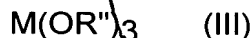
and wherein the radicals are identical or different and have the following meaning:

Ar = a radical having 6 to 20 carbon atoms and at least one aromatic group,

R = an organic radical having 2 to 15 carbon atoms and at least one epoxy group and/or at least one C=C double bond,

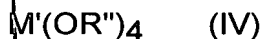
R' = methyl or ethyl.

2. Silicic acid polycondensate according to claim 1, **characterized in that** up to 90 mole percent of said compound of the general formula II are replaced by one or more compounds of the general formula III,



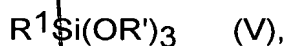
in which M means one of boron and aluminum, R'' represents an alkyl radical with 1 to 4 carbon atoms, and wherein the molar ratio of said replaced compound II in relation to said compound III is 3 : 2.

3. Silicic acid polycondensate according to one of claims 1 and 2, **characterized in that** up to 90 mole percent of said compound of the general formula II are replaced by one or more compounds of the general formula IV



in which M' means silicon, germanium, titanium or zirconium, R'' represents an alkyl radical having 1 to 4 carbon atoms, and wherein the molar ratio of said replaced compound II in relation to said compound IV is 2 : 1.

4. Silicic acid polycondensate according to one or more of claims 1 to 3, **characterized in that** up to 90 mole percent of said compound of the general formula II are replaced by one or more compounds of the general formula V, wherein the molar ratio of said replaced compound II in relation to compound V is 1 : 1,



and wherein the radicals are identical or different and have the following meaning:

R' = methyl or ethyl,

R<sup>1</sup> = CF<sub>3</sub>-(CF<sub>2</sub>)<sub>n</sub>-C<sub>2</sub>H<sub>4</sub>-, with n = 0 to 7,

R<sup>2</sup>HN-(CH<sub>2</sub>)<sub>3</sub>-, with R<sup>2</sup> = H, CH<sub>3</sub>, C<sub>2</sub>H<sub>5</sub> or C<sub>2</sub>H<sub>4</sub>-NHR<sup>2</sup>,

H<sub>2</sub>N-C<sub>2</sub>H<sub>4</sub>-NH-CH<sub>2</sub>-C<sub>6</sub>H<sub>4</sub>-C<sub>2</sub>H<sub>4</sub>-,

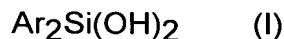
substituted and unsubstituted alkyl having 1 to 8 carbon atoms,

substituted and unsubstituted phenyl, tolyl and naphthyl.

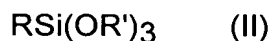
5. Silicic acid polycondensate according to one or more of claims 1 to 4, **characterized in that** up to 80 mole percent of said compound II are replaced by one or more compounds of the general formula III and/or IV and/or V.
6. Silicic acid polycondensate according to one or more of claims 1 to 5, **obtainable by** using a condensation catalyst which is triethylamine, NH<sub>4</sub>F or an alkaline earth hydroxide.
7. Silicic acid polycondensate according to one or more of claims 1 to 6, **obtainable by** compounds of the general formula III, IV (with M' being Ti or Zr) or V (with R<sup>1</sup> being R<sup>2</sup>HN-(CH<sub>2</sub>)<sub>3</sub>- or H<sub>2</sub>N-C<sub>2</sub>H<sub>4</sub>-NH<sub>2</sub>-CH<sub>2</sub>-C<sub>6</sub>H<sub>4</sub>-C<sub>2</sub>H<sub>4</sub>-) acting as condensation catalysts.

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cont
8. Silicic acid polycondensate according to one or more of claims 1 to 7,  
**characterized in that** said radical Ar of the general formula I means a substituted aromatic radical.
9. Silicic acid polycondensate according to claim 8, **characterized in that** said radical Ar of the general formula I means phenyl, naphthyl or styryl.
10. Silicic acid polycondensate according to one or more of claims 1 to 9,  
**characterized in that** said radical R of the general formula II contains functional groups.
11. Silicic acid polycondensate according to one or more of claims 1 to 10,  
**characterized in that** said radical R<sup>1</sup> of the general formula V contains SH groups and/or NR\*<sub>2</sub> groups, with R\* being hydrogen or alkyl.
12. Silicic acid polycondensate according to one or more of claims 1 to 11,  
**characterized in that** said radical R of the general formula II contains at least one acryl and/or methacryl group.
13. Silicic acid polycondensate according to one or more of claims 1 to 12, **obtainable by** adding polysiloxanes to the reaction medium, said polysiloxanes having been obtained by reacting organically modified silanediols of the general formula I with organically modified silanes of the general formula II.
14. Use of the organically modified silicic acid polycondensates according to one or more of claims 1 to 13 as stable in storage, UV curable, NIR permeable materials which are photostructurable in layers of a thickness of 1 to 150 µm.
15. Use according to claim 14 as a negative resist.

16. Method for producing the silicic acid polycondensates according to claim 1 by condensing one or more organically modified silanediols of the general formula I and/or precondensates derived therefrom



with one or more organically modified silanes of the general formula II



in the presence of a base,

wherein condensation occurs without the addition of water,

wherein the molar ratio of the compounds I and II in relation to the monomers is 1 : 1,

wherein up to 90 mole percent of said compound II can be replaced by one or more co-condensable compounds of boron, aluminum, silicon, germanium, titanium and zirconium,

and wherein the radicals are identical or different and have the following meaning:

Ar = a radical having 6 to 20 carbon atoms and at least one aromatic group,

R = an organic radical having 2 to 15 carbon atoms and at least one epoxy group and/or at least one C=C double bond,

R' = methyl or ethyl.

\* \* \*

Add  
Ar